Nirupom Paul
MATH 0370 Foundations of College Mathematics
Mr. Karahouni

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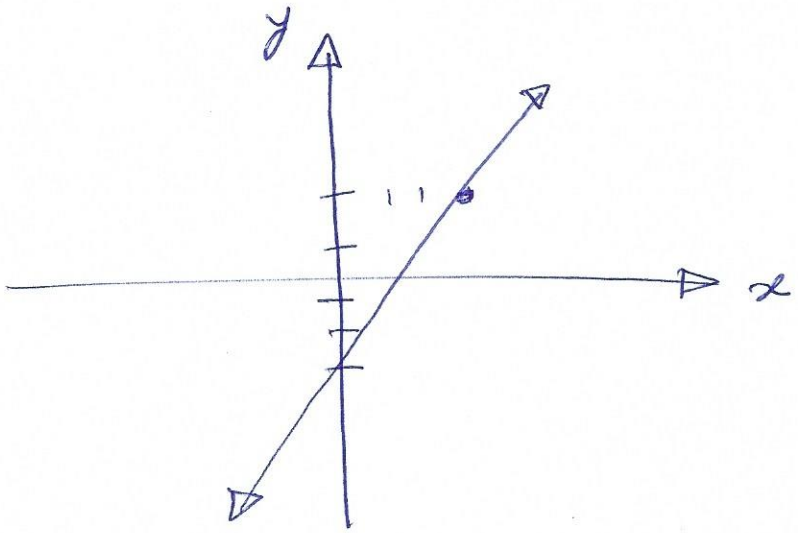
6. (a) $5x - 3y = 9$

$-5x \qquad -5x$

$$\frac{-3y}{-3} = \frac{9-5x}{-3} \quad \frac{}{-3}$$

$$\Rightarrow y = \frac{5}{3}x - 3$$

$\frac{5}{3}$ → slope; -3 → y intercept



6. (b) $-3x - 2y = 4$

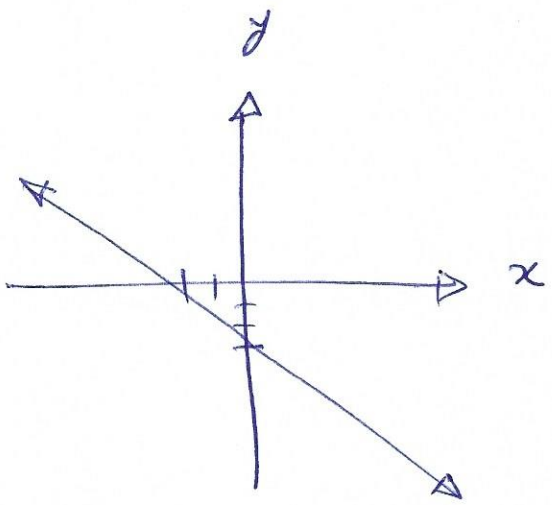
$+3x \qquad +3x$

$$\frac{-2y}{-2} = \frac{4+3x}{-2} \quad \frac{}{-2}$$

$$\therefore y = -2 - \frac{3}{2}x$$

slope $= -3/2$

$(0, -2)$



7. (a) $x - 3y = 1 \quad l_1$

$3x + y = 4 \quad l_2$

$l_1 \Rightarrow x - 3y = 1$

$-x \qquad\qquad -x$

$\Rightarrow \frac{-3y}{-3} = \frac{1-x}{-3}$

$\Rightarrow y = \frac{1}{3}x - \frac{1}{3}$ slope $= \frac{1}{3} = m_1$

$l_2 \Rightarrow 3x + y = 4$

$-3x \qquad\qquad -3x$

$\Rightarrow y = 4 - 3x$ slope $= -3 = m_2$

$m_1 \cdot m_2 = \frac{1}{3}(-3) = -1$

so, the lines are perpendicular.

$l_1 \parallel l_2$ if $m_1 = m_2$

$l_1 \perp l_2$ if $m_1 = \frac{-1}{m_2}$

7. (b) $x - 2y = 8 \Rightarrow L_1$

$2x + 4y = 8 \Rightarrow L_2$

$L_1 \Rightarrow x - 2y = 8$

$-x \quad\quad -x$

$\Rightarrow \frac{-2y}{-2} = \frac{8 - x}{-2}$

$\Rightarrow y = -4 + \frac{1}{2}x$ slope $= 1/2 = m_1$

$L_2 \Rightarrow 2x + 4y = 8$

$-2x \quad\quad -2x$

$\Rightarrow \frac{4y}{4} = \frac{8 - 2x}{4}$

$\therefore y = 2 - \frac{1}{2}x$ slope $= -1/2 = m_2$

$\therefore m_1 m_2 = \left(\frac{1}{2}\right)\left(-\frac{1}{2}\right) = -\frac{1}{4}$ $m_1 \neq m_2$

neither.

7. (c)

$3x + 2y = 6 \Rightarrow l_1$

$6x + 4y = 8 \Rightarrow l_2$

$l_1 \Rightarrow 3x + 2y = 6$

$-3x \qquad -3x$

$\frac{2y}{2} = \frac{6}{2} - \frac{3x}{2}$

$\therefore y = 3 - \frac{3}{2}x$ slope, $m_1 = -3/2$

$l_2 \Rightarrow 6x + 4y = 8$

$-6x \qquad -6x$

$\Rightarrow \frac{4y}{4} = \frac{8}{4} - \frac{6x}{4}$

$\therefore y = 2 - \frac{3}{2}x$ slope, $m_2 = -3/2$

$m_1 = m_2$

So, lines are parallel.

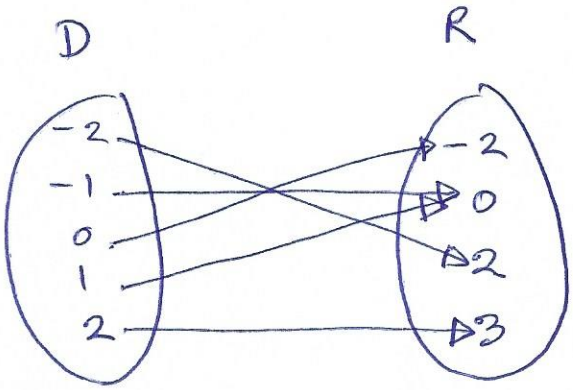
7. (a) $\{(-2,2), (-1,0), (0,-2), (1,0), (2,3)\}$

(a) Domain $= \{-2,-1,0,1,2\}$

(b) Range $= \{2,0,-2,0,3\}$

$= \{-2,0,2,3\}$

(c)



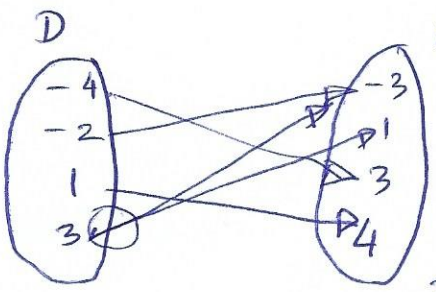
this relation is a function.

8. $\{(-4,3), (-2,-3), (1,4), (3,-3), (3,1)\}$

(a) Domain $= \{-4,-2,1,3\}$

(b) Range $= \{-3, 1, 3, 4\}$

(c)



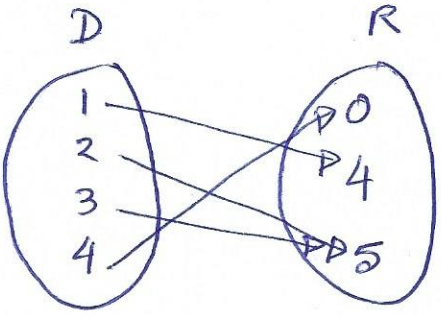
not a function. because 3 distributed in -3 & 1

9. $\{(1,4), (2,5), (3,5), (4,0)\}$

(a) Domain = $\{1, 2, 3, 4\}$

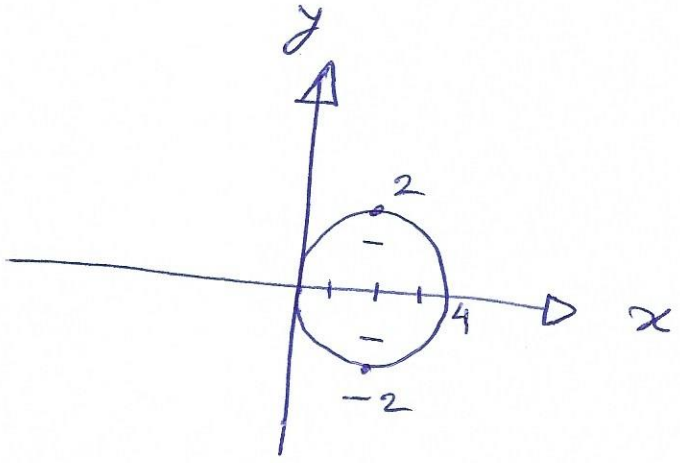
(b) Range = $\{0, 4, 5\}$

(c)



This relation is a function.

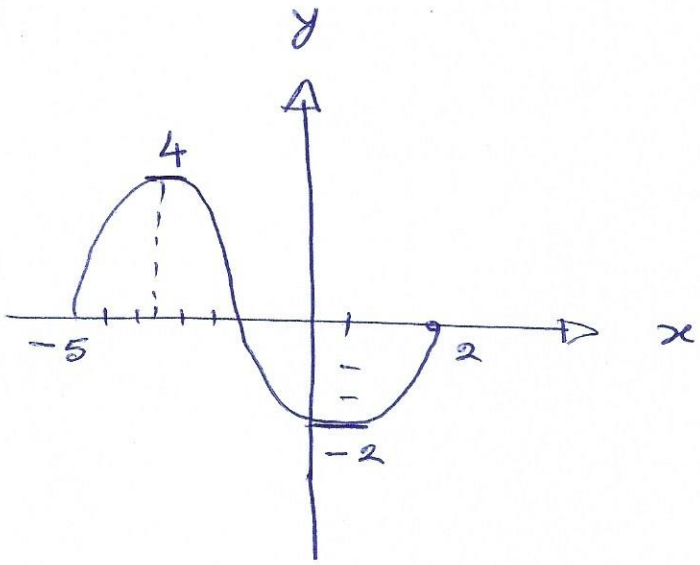
Book, no. 15.



Domain = $[0, 4]$

Range = $[-2, 2]$ not a function.

Book 17.



Domain : $[-5, 2]$

Range : $[-2, 4]$

it's a function.